the combustion of coal in the absence of excess air. The roasted slag was then leached in a pressure vessel at 140°C in 20 wt% hydrochloric acid for 2 hours. At the conclusion of the leach procedure the leach solution was decanted and the solids were washed and dried at 150°C. The composition of the beneficiated titania slag is given in Table 12.--

In the claims:

Amend claims 1, 4-6, 15, and 17-19, as follows:

--1. (Amended) A method of treating titania slag to increase the leachability of impurities from the slag comprising the steps of

sizing the titania slag to a particle size from 75 to 850 μm;

oxidizing the sized slag particles in an oxidizing atmosphere at a temperature from about 700°C and above but below about 950°C for at least 30 minutes allowing an anatase phase to stabilize in the slag, allowing the iron present in the slag to concentrate at the exposed surfaces of the slag particles, allowing a major portion of the iron in the Fe(II) state to convert to the Fe(III) state, and allowing the titanium in the Ti(III) state to be converted to the Ti(IV) state; and

reducing the oxidized slag in a reducing atmosphere from about 700°C to about 950°C for at least 5 minutes to convert a major portion of the iron in the Fe(III) state to the Fe(II) state and without converting a substantial portion of the titanium in the Ti(IV) state to the Ti(III) state.--

--4. (Amended) The method of any one of the claims 1 to 3 wherein more than 90% of the iron in the Fe(II) state is converted to the Fe(III) state during oxidized of the slag.--

--5. (Amended) The method of any one of the claims 1 to 3 wherein substantially all the iron in the Fe(II) state is converted to the Fe(III) state during oxidizing of the slag.--

--6. (Amended) A method of beneficiating titania slag to increase the TiO_2 content thereof to at least 90% by weight comprising the steps of:

sizing the titania slag to a particle size from 75 to 850 μm;

oxidizing the sized slag particles in an oxidizing atmosphere at a temperature from about 700°C and above but below about 950°C for at least 30 minutes allowing an anatase phase to stabilize in the slag, allowing the iron present in the slag to concentrate at the exposed surfaces of

the slag particles, allowing a major portion of the iron in the Fe(II) state to convert to the Fe(III) state, and allowing the titanium in the Ti(III) state to be converted to the TI(IV) state;

reducing the oxidized slag in a reducing atmosphere from about 700°C to about 950°C for at least 5 minutes to convert a major portion of the iron in the Fe(III) state to the Fe(II) state and without converting a substantial portion of the titanium in the Ti(IV) state to the Ti(III) state; and

leaching the reduced slag with acid to obtain a beneficiated slag product with an increased TiO_2 content and leach liquor containing the leached impurities.--

--15. (Amended) The method of any one of claims 6 to 13 wherein the oxidation is carried out at a temperature from about 750°C and above but below about 900°C.--

--17. (Amended) The method of any one of claims 6 to 13 wherein more than 90% of the iron in the Fe(II) state is converted to the Fe(III) state during oxidizing of the slag.--

--18. (Amended) The method of any one of claims 6 to 13 wherein substantially all the iron in the Fe(II) state is converted to the Fe(III) state during oxidizing of the slag.--

--19. (Amended) A product when formed by a method of any one of the claims 1 to 3 and 6 to 13.--